

What is claimed is:

1. An energy and power interchange system comprising a system including energy generating means which generates transmittable energy using an energy source,  
5 an energy path which transmits energy generated by said energy generating means, a measuring equipment which is mounted on said energy path for measuring an amount of energy which is transmitted through said energy path, and a system which consumes energy  
10 supplied by way of said energy path, the improvement being characterized in that said energy sources used by said energy generating means and said generated energy amount are controlled in response to said energy amount measured by said measuring equipment.

15 2. An energy and power interchange system comprising a first system including power generating facilities, a second system in foreign countries having power generating facilities, an energy path constructed by a direct current transmission system  
20 which interconnects said first system and said second system, and a measuring equipment which is mounted on said energy path and measures an energy amount transmitted through said energy path, the improvement being characterized in that control parameters of said  
25 first and second systems are changed or said transmitting direction of energy is decided in response to said energy amount measured by said measuring equipment.

30 3. An energy and power interchange system comprising an energy path constituted by a direct current transmission system which interconnects systems of at least three different countries having power generating facilities and a measuring equipment

which is mounted on said energy path and measures an energy amount transmitted through said energy path, the improvement being characterized in that control parameters of said systems of at least three countries are changed or transmitting direction of energy is decided in response to said energy amount measured by said measuring equipment.

4. An energy and power interchange system according to claim 2, wherein said energy and power interchange system includes an interconnection adjustment equipment which transmits converted values to respective systems in response to information measured by said measuring equipment, wherein said converted values are converted values of expenses including energy generating expense and energy transmission expense or converted values of environmental load including generated carbon oxide gas.

5. An energy and power interchange system according to claim 4, wherein said energy and power interchange system includes an interchange administration equipment which carries out settlement, conclusion of a contract or an interchange control using said converted values transmitted from said interconnection adjustment equipment.

6. An energy and power interchange system according to claim 2, wherein said energy path is disposed along other energy transport route and is installed such that said energy path is directly secured to said other transport route or secured to said other energy transport route while sharing a same support structure with said other transport route or said energy path is installed at a point higher than 1000 meters below the

sea level.

7. An energy and power interchange system according to claim 2, wherein a power storage equipment is installed in at least one of said systems and the input and output of said power storage equipment is controlled in response to change of power flow rate between systems.

8. An energy and power interchange system according to claim 1, wherein said energy path is one selected from a group consisting of an alternating current system, a direct current interconnecting system, a pipeline, a transport path and an electric wave path.

9. An energy and power interchange system according to claim 2, wherein the above-mentioned respective systems are located at countries which differ in circulating currency and they convert to the preliminarily decided currency unit or carry out such a conversion based on information on exchange rate or said respective systems are located in countries which differ in languages and said information is transmitted by way of translating machines.

10. An energy and power interchange system according to claim 2, wherein said system comprises one system which includes many thermal power facilities and the other system which includes many hydro electric power facilities, and generated power amount is controlled such that overall fuel consumption amount of said system which includes many thermal power facilities is lower than predetermined value and energy is transmitted from said system which includes many hydro electric power facilities.

11. An energy and power interchange system according to claim 2, wherein said system comprises a system

having electric power of good quality and a system having electric power of poor quality and said system is controlled such that power flow flows from said system of good electric power to said system of poor electric power.

12. An energy and power interchange system according to claim 1, wherein said systems are located in countries having at least two hours time difference and energy transmitted from said one system to said another system is controlled using demand estimation data of respective systems.

13. An energy and power interchange system according to claim 2, wherein an alternating current/direct current converter is provided between said system and said energy path and as information transmission means for transmitting information to control alternating current/direct current converter, at least one of satellite communication facilities, optical communication facilities, microwave communication facilities and telephone circuit communication facilities is provided and said information communication means is provided with delay timers.

14. An energy and power interchange system according to claim 13, wherein said information includes information on said system, or information to which time information detected by a transmission time difference detector for detecting time difference for information transmission is added, or said interchanged electric energy, restriction on said interchanged electric energy, or operation information on a direct current power transmission system.

15. An energy and power interchange system according to claim 5, wherein a consideration to said settlement,

conclusion of contract or interchange control by said interchange administration equipment may be at least one of CO<sub>2</sub> emission right which concerns with CO<sub>2</sub> emission utilities, fuel, electrical energy or money.

5 16. An energy and power interchange system according to claim 2, wherein said energy and power interchange system is provided with a power interchange control equipment and such a power interchange control equipment decides operating condition of said  
10 generator, or operating condition of said power storage equipment, or interchanged electrical energy between said alternating current systems using at least one of interchangeable electrical energy, electrical energy, load of respective alternating  
15 current systems, generated energy, emergency power source or an interchange power command value is decided using at least one of demand information, power generating information, exchange rate information, power generating cost information and  
20 power transmission information, or using at least one of power cost, power generating and transmission cost, CO<sub>2</sub> emission amount, load balancing index, demand and supply balance index, or power supply and a reliability index of respective countries or regions  
25 or every hours or every seasons is formed as an object function, and an interchanging power command value is decided based on calculation result of a calculation processing equipment which executes an optimization calculation.

30 17. An energy and power interchange method characterized in that a first system which is provided with power generating facilities and a second system in a foreign country which is provided with power

generating facilities are interconnected by an energy path constituted by a direct current power transmission system and transmitting energy is measured by a measuring equipment mounted on said energy path and control parameters of said first system or said second system are changed or energy transmitting direction is decided in response to energy amount measured by the measuring equipment.

18. An energy and power interchange method according to claim 17, wherein converted values of cost including energy generating cost and energy transmission cost and converted values of environmental load including generated carbon oxide are obtained based on information measured by said measuring equipment and settlement, conclusion of contract or interchange control is carried out using said converted values.